

ABSTRACT

Separators for lithium batteries based on a sheetlike flexible substrate provided with a plurality of openings and having a porous inorganic electrically insulating coating on and in the substrate, the coating closing the openings in the substrate, the material of the substrate being selected from woven or non-woven electrically nonconductive polymeric fibers and the inorganic electrically conductive coating comprising metal oxide particles, the separators being electrical insulators and having lithium ion conducting properties without the presence of an electrolyte, the separators comprising at least one lithium ion conducting inorganic material which may also contain organic groups chemically bonded to the inorganic coating, which separators, after filling them with an additional lithium ion conducting electrolyte, have much higher ion conduction than conventional combinations of non-lithium ion conducting separators and electrolyte; a process for producing the separators; and batteries, such as high power lithium batteries, containing them.